List of Contents

NUMBER 1

Alok Porwal, E.J.M. Carranza and M. Hale	1	Bayesian network classifiers for mineral potential mapping
Nam H. Tran, Zhixi Chen and Sheik S. Rahman	17	Integrated conditional global optimisation for discrete fracture network modelling
Radu C. Gogu, Volker J. Dietrich, Bernhard Jenny, Florian M. Schwandner and Lorenz Hurni	29	A geo-spatial data management system for potentially active volcanoes—GEOWARN project
Wolfram Rühaak	43	A Java application for quality weighted 3-d interpolation
Eric A. de Kemp, Ernst M. Schetselaar and Kevin Sprague	52	3-D symbolization of L–S fabrics as an aid to the analysis of geological structures
Yilin Fang, Steven B. Yabusaki and Gour-Tsyh Yeh	64	A general simulator for reaction-based biogeochemical processes*
Björn Zehner	73	Interactive exploration of tensor fields in geosciences using volume rendering
Bruno Andò and Emilio Pecora	85	An advanced video-based system for monitoring active volcanoes*
Jorge D. Abad and Marcelo H. Garcia	92	*RVR Meander*: A toolbox for re-meandering of channelized streams*
R.J. Lisle, J.L. Fernández Martínez, N. Bobillo-Ares, O. Menéndez, J. Aller and F. Bastida	102	FOLD PROFILER: A MATLAB®—based program for fold shape classification*
David Robinson, Trevor Dhu and John Schneider	109	SUA: A computer program to compute regolith site-response and estimate uncertainty for probabilistic seismic hazard analyses*
Jacob Napieralski, Yingkui Li and Jon Harbor	124	Comparing predicted and observed spatial boundaries of geologic phenomena: Automated Proximity and Conformity Analysis applied to ice sheet reconstructions*
Timothy C. Riley, Theodore A. Endreny and John D. Halfman	135	Monitoring soil moisture and water table height with a low-cost data logger
Manfred Mudelsee	141	CLIM-X-DETECT: A Fortran 90 program for robust detection of extremes against a time-dependent background in climate records

NUMBER 2

Tianfu Xu, Eric Sonnenthal, Nicolas Spycher and Karsten Pruess	145	TOUGHREACT—A simulation program for non-isothermal multiphase reactive geochemical transport in variably saturated geologic media: Applications to geothermal injectivity and CO2 geological sequestration*
Thomas A. Jones	166	MATLAB functions to analyze directional (azimuthal) data—I: Single-sample inference*
Thomas A. Jones	176	MATLAB functions to analyze directional (azimuthal) data—II: Correlation*

Byron Antoniou and Lysandros Tsoulos	184	The potential of XML encoding in geomatics converting raster images to XML and SVG
Dai Qin, Ma Jianwen and Ou Yang Yun	195	Remote sensing data change detection based on the CI test of Bayesian networks
Kwan Tun Lee, Yi-Ru Chung, Chi-Chung Lau, Chung-Chieh Meng and Shen Chiang	203	A window-based inquiry system for design discharge based on geomorphic runoff modeling
L. Tacher, I. Pomian-Srzednicki and A. Parriaux	212	Geological uncertainties associated with 3-D subsurface models
Marcus Apel	222	From 3d geomodelling systems towards 3d geoscience information systems: Data model, query functionality, and data management
Chao Chen, Jianghai Xia, Jiangping Liu and Guangding Feng	230	Nonlinear inversion of potential-field data using a hybrid-encoding genetic algorithm
Serhat Akin	240	Mathematical modeling of steam-assisted gravity drainage*
A. Kruger, Ramon Lawrence and E.C. Dragut	247	Building a terabyte NEXRAD radar database for hydrometeorology research
Oliver S. Boyd	259	An efficient Matlab script to calculate heterogeneous anisotropically elastic wave propagation in three dimensions*
Short note		
Akira Kageyama, Tooru Sugiyama, Kunihiko Watanabe and Tetsuya Sato	265	A note on the dipole coordinates
Arthur J. Lembo Jr., Megan Young Lew, Magdeline Laba and Philippe Baveye	270	Use of spatial SQL to assess the practical significance of the Modifiable Areal Unit Problem
José Fernández, María Charco, John B. Rundle and Kristy F. Tiampo	275	A revision of the FORTRAN codes GRAVW to compute deformation produced by a point magma intrusion in elastic-gravitational layered earth models*

NUMBER 3

Witold F. Krajewski, Alexandros A. Ntelekos and Radosław Goska	283	A GIS-based methodology for the assessment of weather radar beam blockage in mountainous regions: two examples from the US NEXRAD network
A. Mansourian, A. Rajabifard, M.J. Valadan Zoej and I. Williamson	303	Using SDI and web-based system to facilitate disaster management
Frank Pattyn	316	GRANTISM: An Excel™ model for Greenland and Antarctic ice-sheet response to climate changes
John V. Smith and Eberhard Beermann	326	Multivectors: Nine components represented on a ternary diagram
J.J. Carrera-Hernández and S.J. Gaskin	339	The groundwater modeling tool for GRASS (GMTG): Open source groundwater flow modeling*
Mario A. Morin and Francesco Ficarazzo	352	Monte Carlo simulation as a tool to predict blasting fragmentation based on the Kuz–Ram model*
E. Poizot, Y. Mear, M. Thomas and S. Garnaud	360	The application of geostatistics in defining the characteristic distance for grain size trend analysis

Chengliang Fan, Gary L. Pavlis and Kagan Tuncay 371 GCLgrid: A three-dimensional geographical curvilinear grid library for computational seismology*

Robyn K. Robertson, Ute A. Mueller and Lynette M. Bloom 382 Direct sequential simulation with histogram reproduction: A comparison of algorithms

Kevin Sprague, Eric de Kemp, Winston Wong, John McGaughey, Gervais Perron and Tucker Barrie 396 Spatial targeting using queries in a 3-D GIS environment with application to mineral exploration

Ricardo A. Olea 419 Erratum

NUMBER 4

B. Tutmez, Z. Hatipoglu and U. Kaymak 421 Modelling electrical conductivity of groundwater using an adaptive neuro-fuzzy inference system

Jiang Xiaoyu, Qiao Jianping, Wang Chenghua and Zhao Yu 434 Computer simulation of landslides by the contact element method

Cheinway Hwang and Yu-Chi Kao 442 Spherical harmonic analysis and synthesis using FFT: Application to temporal gravity variation

A.J.A.M. Temme, J.M. Schoorl and A. Veldkamp 452 Algorithm for dealing with depressions in dynamic landscape evolution models

Chui Kwan Cheung and Wenzhong Shi 462 Positional error modeling for line simplification based on automatic shape similarity analysis in GIS

Yunhao Chen, Xiaobing Li and Jing Li 476 A TSAR model for daily evapotranspiration at broad spatial scales: A case study in Northern China

Chang-Hsu Chen and Zsay-Shing Lin 485 A committee machine with empirical formulas for permeability prediction

Johiris I. Rodríguez-Tablante, Christopher Juhlin and Björn Bergman 497 *F*irst *A*rrival *S*eismic *T*omography (FAST) vs. PStomo_eq applied to crooked line seismic data from the Siljan ring area

M.L. Damiani, G. Groppelli, G. Norini, E. Bertino, A. Gigliuto and A. Nucita 512 A lava flow simulation model for the development of volcanic hazard maps for Mount Etna (Italy)

Rongjiang Wang, Francisco Lorenzo-Martín and Frank Roth 527 PSGRN/PSCMP—a new code for calculating co- and post-seismic deformation, geoid and gravity changes based on the viscoelastic-gravitational dislocation theory

Thushan C. Ekneligoda and Herbert Henkel 542 The spacing calculator software—A Visual Basic program to calculate spatial properties of lineaments

Jibin Zhou and Xianhua Li 554 GeoPlot: An Excel VBA program for geochemical data plotting

NUMBER 5

G. Bonham-Carter 561 Editorial

Sharon Parsons, Léopold Nadeau, Pierre Keating and Chang-Jo Chung 565 Optimizing the use of aeromagnetic data for predictive geological interpretation: an example from the Grenville Province, Quebec

P.J. Zarco-Tejada, J.R. Miller, R. Pedrós, W. Verhoef and M. Berger 577 FluorMODgui V3.0: A graphic user interface for the spectral simulation of leaf and canopy chlorophyll fluorescence*

K. Snopek and U. Casten 592 3GRAINS: 3D Gravity Interpretation Software and its application to density modeling of the hellenic subduction zone*

B.D. Bue and T.F. Stepinski 604 Automated classification of landforms on Mars

Qing Zhu, Yixiang Tian and Jie Zhao 615 An efficient depression processing algorithm for hydrologic analysis

Zhi-Liang Wang and Yong-Chi Li 624 Analysis of factors influencing the solution of the consolidation problem by using an element-free Galerkin method

Ata Bilgili, Keston W. Smith and Daniel R. Lynch 632 Bat Tri: A two-dimensional bathymetry-based unstructured triangular grid generator for finite element circulation modeling*

G. Descamps, P. Therrien and R. Therrien 643 An interactive and open approach for the analysis and diffusion of geoscientific data

John A. Knox and Paul R. Ohmann 656 Iterative solutions of the gradient wind equation*

Qingmou Li and Qiuming Cheng 663 VisualAnomaly: A GIS-based multifractal method for geochemical and geophysical anomaly separation in Walsh domain

Mauro De Donatis and Lorenzo Bruciatelli 673 MAP IT: The GIS software for field mapping with tablet pc

James Gunning and Michael E. Glinsky 681 Wavelet extractor: A Bayesian well-tie and wavelet extraction program*

Short note

M. Murat Monkul and Okan Önal 696 A Visual Basic program for analyzing oedometer test results and evaluating intergranular void ratio*

Xiaoyong Zhan and James J. Butler Jr. 704 KGS-HighK: A Fortran 90 program for simulation of hydraulic tests in highly permeable aquifers*

Letter to the Editor

L.F. Han and P. Maloszewski 708 Comment on 'LUMPED: a Visual Basic code of lumped-parameter models for mean residence time analyses of groundwater systems by Ozyurt and Bayari, Computers & Geosciences 29 (2003) 79–90'

NUMBER 6

Tim L. Webster and George Dias 713 An automated GIS procedure for comparing GPS and proximal LIDAR elevations*

Young Hong Shin, Kwang Sun Choi and Houze Xu 727 Three-dimensional forward and inverse models for gravity fields based on the Fast Fourier Transform*

Glaydston Mattos Ribeiro and Luiz Antonio Nogueira Lorena 739 Heuristics for cartographic label placement problems

Quintijn Clevis, Gregory E. Tucker, Stephen T. Lancaster, Arnaud Desitter, Nicole Gasparini and Gary Lock 749 A simple algorithm for the mapping of TIN data onto a static grid: Applied to the stratigraphic simulation of river meander deposits

Glenn Chubak and Igor Morozov 767 Integrated software framework for processing of geophysical data*

Faisal Hossain, Emmanouil N. Anagnostou and Amvrossios C. Bagtzoglou 776 On Latin Hypercube sampling for efficient uncertainty estimation of satellite rainfall observations in flood prediction

Shaochun Dong, Shijin Xu and Gangshan Wu 793 Earth Science Digital Museum (ESDM): Toward a new paradigm for museums

N.A.S. Hamm, J.W. Hall and M.G. Anderson 803 Variance-based sensitivity analysis of the probability of hydrologically induced slope instability

Michael Sawada 818 An open source implementation of the Modern Analog Technique (MAT) within the R computing environment*

P.A. Hancock and M.F. Hutchinson 834 Automatic computation of hierarchical biquadratic smoothing splines with minimum GCV

Yingqi Tang and David W. Wong 846 Exploring and visualizing sea ice chart data using Java-based GIS tools

NUMBER 7

G. Iovine, M. Sheridan and S. Di Gregorio 859 Computer simulation of natural phenomena for hazard assessment

D. D'Ambrosio, W. Spataro and G. Iovine 861 Parallel genetic algorithms for optimising cellular automata models of natural complex phenomena: An application to debris flows

Maria Vittoria Avolio, Gino Mirocle Crisci, Salvatore Di Gregorio, Rocco Rongo, William Spataro and Giuseppe A. Trunfio 876 SCIARA γ2: An improved cellular automata model for lava flows and applications to the 2002 Etnean crisis

M. Andretta, R. Serra and M. Villani 890 A new model for polluted soil risk assessment

Maria Vittoria Avolio, Gino Mirocle Crisci, Salvatore Di Gregorio, Rocco Rongo, William Spataro and Donato D'Ambrosio 897 Pyroclastic flows modelling using cellular automata

A.K. Patra, C.C. Nichita, A.C. Bauer, E.B. Pitman, M. Bursik and M.F. Sheridan 912 Parallel adaptive discontinuous Galerkin approximation for thin layer avalanche modeling

D. Yuk, S.C. Yim and P.L.-F. Liu 927 Numerical modeling of submarine mass-movement generated waves using RANS model

Regular papers

Orkun Ersoy, Gary Chinga, Erkan Aydar, Alain Gourgaud, H. Evren Cubukcu and Inan Ulusoy 936 Texture discrimination of volcanic ashes from different fragmentation mechanisms: A case study, Mount Nemrut stratovolcano, eastern Turkey

Lianshuang Qi and Timothy R. Carr 947 Neural network prediction of carbonate lithofacies from well logs, Big Bow and Sand Arroyo Creek fields, Southwest Kansas

Xavier Emery 965 A disjunctive kriging program for assessing point-support conditional distributions

G.R.J. Cooper 984 Interpreting potential field data using continuous wavelet transforms of their horizontal derivatives

A.S. Gaab, W. Todt and U. Poller 993 CLEO: Common lead evaluation using Octave

NUMBER 8

Tetsuya Shoji and Chang-Jo Chung	1005	Guest Editorial
Tetsuya Shoji and Hisashi Kitaura	1007	Statistical and geostatistical analysis of rainfall in central Japan
Tetsuya Shoji	1025	Statistical and geostatistical analysis of wind: A case study of direction statistics
Xiaolu Gao, Yasushi Asami and Chang-Jo F. Chung	1040	An empirical evaluation of spatial regression models
Chang-Jo Chung	1052	Using likelihood ratio functions for modeling the conditional probability of occurrence of future landslides for risk assessment
Hirohito Kojima and Shigeyuki Obayashi	1069	An inverse analysis of unobserved trigger factor for slope stability evaluation
Katsuaki Koike and Yuichi Ichikawa	1079	Spatial correlation structures of fracture systems for deriving a scaling law and modeling fracture distributions
Yutaka Harada and Takahito Shimada	1096	Examining the impact of the precision of address geocoding on estimated density of crime locations
Qiuming Cheng, Connie Ko, Yinhuan Yuan, Yong Ge and Shengyuan Zhang	1108	GIS modeling for predicting river runoff volume in ungauged drainages in the Greater Toronto Area, Canada
John C. Davis, Chang-Jo Chung and Gregory C. Ohlmacher	1120	Two models for evaluating landslide hazards
Tetsuya Shoji	1128	Optimal systems of geoscience surveying–A preliminary discussion*
Regular papers		
Jasper A. Vrugt, Breanndán Ó Nualláin, Bruce A. Robinson, Willem Bouten, Stefan C. Dekker and Peter M.A. Sloot	1139	Application of parallel computing to stochastic parameter estimation in environmental models*
Fuat Yavuz, Vural Yavuz and Ahmet Sasmaz	1156	WinClastour—a Visual Basic program for tourmaline formula calculation and classification*
Márcio M. Valeriano, Tatiana M. Kuplich, Moisés Storino, Benedito D. Amaral, Jaime N. Mendes Jr. and Dayson J. Lima	1169	Modeling small watersheds in Brazilian Amazonia with shuttle radar topographic mission-90m data
Dong-Hoon Sheen, Kagan Tuncay, Chang-Eob Baag and Peter J. Ortoleva	1182	Parallel implementation of a velocity-stress staggered-grid finite-difference method for 2-D poroelastic wave propagation*
John B. Lindsay and Irena F. Creed	1192	Distinguishing actual and artefact depressions in digital elevation data
Zulfiquar A. Reza, Matthew J. Pranter and Paul Weimer	1205	ModDRE: A program to model deepwater-reservoir elements using geomorphic and stratigraphic constraints*
Makoto Otsubo and Atsushi Yamaji	1221	Improved resolution of the multiple inverse method by eliminating erroneous solutions
Mitchell G. Mihalynuk, Shannon M.S. Mallory and Brian Grant	1228	Geological symbol set for Manifold® Geographic Information System*

NUMBER 9

Wenbao Liu and Wanhong Yang	1235	Estimating coordinates of a 2D-point from multiple observations
James Irving and Rosemary Knight	1247	Numerical modeling of ground-penetrating radar in 2-D using MATLAB*
Kevin E. Kohler and Shaun M. Gill	1259	Coral Point Count with Excel extensions (CPCe): A Visual Basic program for the determination of coral and substrate coverage using random point count methodology*
Deng-Hua Zhong, Ming-Chao Li, Ling-Guang Song and Gang Wang	1270	Enhanced NURBS modeling and visualization for large 3D geoengineering applications: An example from the Jinping first-level hydropower engineering project, China
Tomislav Hengl	1283	Finding the right pixel size*
Chen Yunhao, Shi Peijun, Li Xiaobing, Chen Jin and Li Jing	1299	A combined approach for estimating vegetation cover in urban/suburban environments from remotely sensed data
Ivana Kolingerová and Borut Žalik	1310	Reconstructing domain boundaries within a given set of points, using Delaunay triangulation
R. Webster, S.J. Welham, J.M. Potts and M.A. Oliver	1320	Estimating the spatial scales of regionalized variables by nested sampling, hierarchical analysis of variance and residual maximum likelihood*
H.M.A. van der Werff, W.H. Bakker, F.D. van der Meer and W. Siderius	1334	Combining spectral signals and spatial patterns using multiple Hough transforms: An application for detection of natural gas seepages
Benjamin F. Turner and Jeremy B. Fein	1344	Protofit: A program for determining surface protonation constants from titration data*
Andrew F. Weller, Anthony J. Harris, J. Andrew Ware and Paul S. Jarvis	1357	Determining the saliency of feature measurements obtained from images of sedimentary organic matter for use in its classification
Stephen Henley	1368	The problem of missing data in geoscience databases
Budiman Minasny and Alex B. McBratney	1378	A conditioned Latin hypercube method for sampling in the presence of ancillary information*
D.A. Hughes and D.A. Forsyth	1389	A generic database and spatial interface for the application of hydrological and water resource models*
Igor Morozov, Brian Reilkoff and Glenn Chubak	1403	A generalized web service model for geophysical data processing and modeling
Thomas Ingeman-Nielsen and Franois Baumgartner	1411	CR1Dmod: A Matlab program to model 1D complex resistivity effects in electrical and electromagnetic surveys*
R. Leonhardt	1420	Analyzing rock magnetic measurements: The RockMagAnalyzer 1.0 software
F.J. González-Matesanz and J.A. Malpica	1432	Quasi-conformal mapping with genetic algorithms applied to coordinate transformations
N.A. Teanby	1442	An icosahedron-based method for even binning of globally distributed remote sensing data*

Ekkehard Holzbecher	1451	Calculating the effect of natural attenuation during bank filtration
Mowen Xie, Tetsuro Esaki, Cheng Qiu and Chunxiang Wang	1461	WITHDRAWN: Geographical Information System-based computational implementation and application of spatial three-dimensional slope stability analysis
David R. Nelson	1479	CONCH: A Visual Basic program for interactive processing of ion-microprobe analytical data*
K. Prabhakar Rao and G. Ashok Babu	1499	EMOD2D—a program in C++ for finite difference modelling of magnetotelluric TM mode responses over 2D earth*
Wei Luo, Edit Peronja, Kirk Duffin and Jay A. Stravers	1512	Incorporating nonlinear rules in a web-based interactive landform simulation model (WILSIM)
O. Falivene, P. Arbués, J. Howell, O. Fernández, P. Cabello, J.A. Muñoz and L. Cabrera	1519	A FORTRAN program to introduce field-measured sedimentary logs into reservoir modelling packages*
João Coelho	1523	GEOISO—A Windows™ program to calculate and plot mass balances and volume changes occurring in a wide variety of geologic processes*
Frits Agterberg	1529	Rubin H. Landau (Ed.), A first course in scientific computing: symbolic, graphic, and numeric modeling using Maple, Java, Mathematica, and Fortran 90, Princeton University Press, Princeton and Oxford, ISBN 0-691-12183-4, 2005 (481pp. +CD-ROM, price $49.50 (US) cloth.).
Marek Kacewicz	1532	G. Bárdossy, J. Fodor, Evaluation of Uncertainties and Risks in Geology, Springer, Berlin, ISBN 3-540-206221, 2004 (222p, price US$129 hardcover)

NUMBER 10

Zhi-liang Wang, Yong-chi Li and J.G. Wang	1535	Study of stress waves in geomedia and effect of a soil cover layer on wave attenuation using a 1-D finite-difference method*
Yuhong Liu	1544	Using the *Snesim* program for multiple-point statistical simulation*
M. Bursik and G. Rogova	1564	Use of neural networks and decision fusion for lithostratigraphic correlation with sparse data, Mono-Inyo Craters, California
Cheinway Hwang, Yu-Shen Hsiao and Hsuan-Chang Shih	1573	Data reduction in scalar airborne gravimetry: Theory, software and case study in Taiwan*
G.R.J. Cooper and D.R. Cowan	1585	Enhancing potential field data using filters based on the local phase*
G.R.J. Cooper	1592	Obtaining dip and susceptibility information from Euler deconvolution using the Hough transform*
Guy Simpson and Sébastien Castelltort	1600	Coupled model of surface water flow, sediment transport and morphological evolution
Xavier Emery and Christian Lantuéjoul	1615	TBSIM: A computer program for conditional simulation of three-dimensional Gaussian random fields via the turning bands method*
Chaoshui Xu, Peter Alan Dowd, Kanti V. Mardia and Robert J. Fowell	1629	A flexible true plurigaussian code for spatial facies simulations*

Ulisses T. Mello and Liqing Xu	1646	Using XML to improve the productivity and robustness in application development in geosciences*
Hansheng Wang, Patrick Wu and Zhiyong Wang	1654	An approach for spherical harmonic analysis of non-smooth data*
Clayton V. Deutsch	1669	A sequential indicator simulation program for categorical variables with point and block data: BlockSIS*
P. Clegg, L. Bruciatelli, F. Domingos, R.R. Jones, M. De Donatis and R.W. Wilson	1682	Digital geological mapping with tablet PC and PDA: A comparison
James D. McCarthy and Phil A. Graniero	1699	A GIS-based borehole data management and 3D visualization system
Mauro Giudici and Chiara Vassena	1709	dsm.f90: A computer code for the solution of an inverse problem of ground water hydrology by the differential system method*
Robert I. Dunfey, Bruce M. Gittings and James K. Batcheller	1720	Towards an open architecture for vector GIS
S.A. Benahmed Daho, S. Kahlouche and J.D. Fairhead	1733	A procedure for modelling the differences between the gravimetric geoid model and GPS/levelling data with an example in the north part of Algeria*
Christian Kiehle	1746	Business logic for geoprocessing of distributed geodata
Danny Thorne, Christian D. Langevin and Michael C. Sukop	1758	Addition of simultaneous heat and solute transport and variable fluid viscosity to SEAWAT*
Craig O'Neill, Louis Moresi, Dietmar Müller, Rich Albert and Frédéric Dufour	1769	Ellipsis 3D: A particle-in-cell finite-element hybrid code for modelling mantle convection and lithospheric deformation*
Anne M Le Brocq, Antony J Payne and Martin J Siegert	1780	West Antarctic balance calculations: Impact of flux-routing algorithm, smoothing algorithm and topography*
Jinqu Zhang, Yunpeng Wang and Yan Li	1796	A C++ program for retrieving land surface temperature from the data of Landsat TM/ETM+ band6*
N. Sundararajan, V. Ramesh Babu, N. Shiva Prasad and Y. Srinivas	1806	VLFPROS—A Matlab code for processing of VLF-EM data*
Aidan Slingsby	1814	Z. Sisi, P. David (Eds.) Large-Scale 3D Data Integration, CRC, Boca Raton, FL
Rongjiang Wang, Franciso Lorenzo-Martín and Frank Roth	1817	Erratum to: "Computation of deformation induced by earthquakes in a multi-layered elastic crust—FORTRAN programs EDGRN/EDCMP" [Computers & Geosciences, 29(2) (2003) 195–207]